FIG. 1

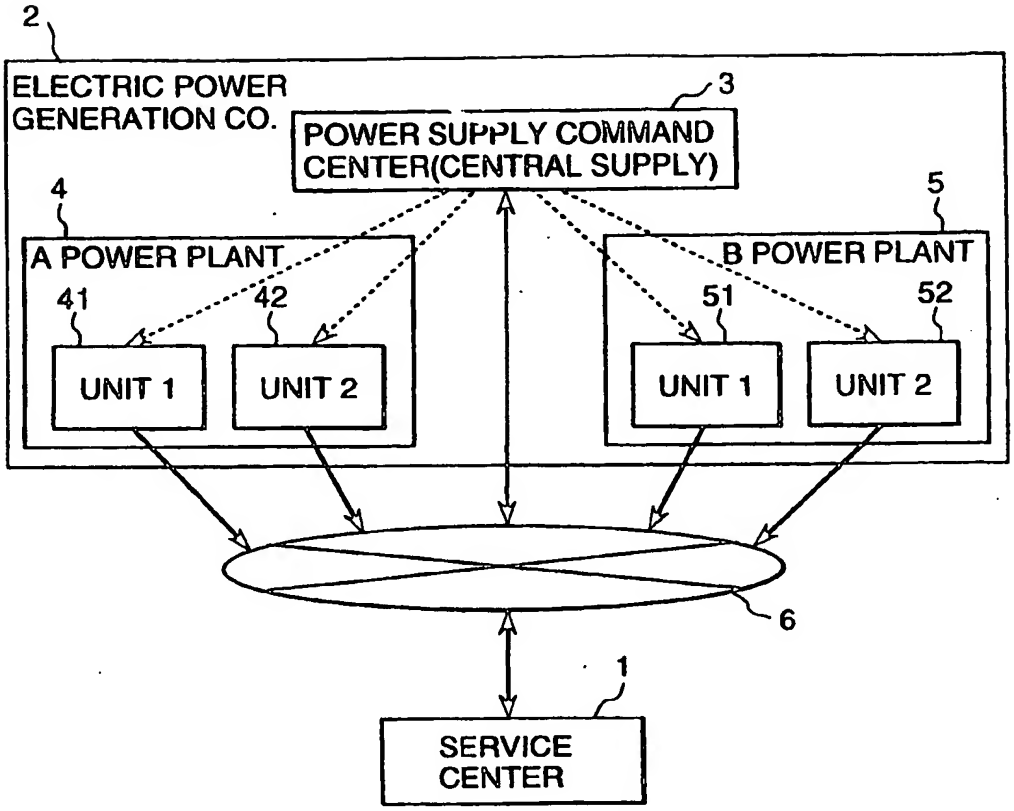

2
ELECTRIC POWER GENERATION CO.
3
POWER SUPPLY COMMAND CENTER(CENTRAL SUPPLY)
4
A POWER PLANT
5
B POWER PLANT
41
42
51
52
UNIT 1
UNIT 2
UNIT 1
UNIT 2
6
1
SERVICE CENTER

FIG. 2

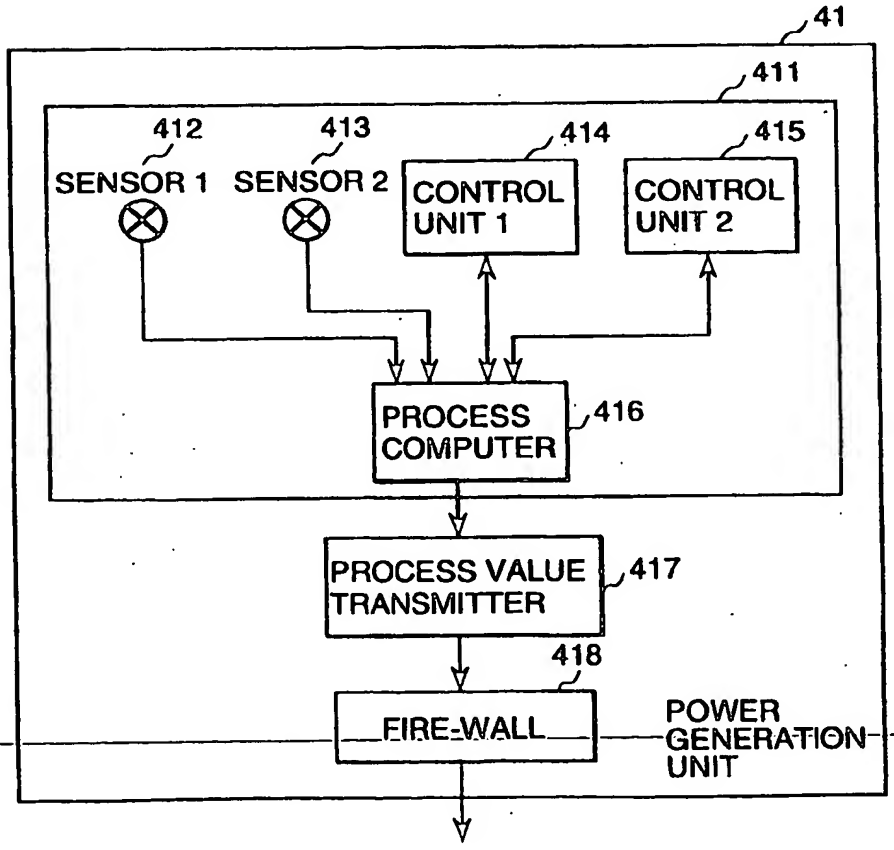

41
411
412
413
414
415
SENSOR 1
SENSOR 2
CONTROL UNIT 1
CONTROL UNIT 2
PROCESS COMPUTER
416
PROCESS VALUE TRANSMITTER
417
418
FIRE-WALL
POWER GENERATION UNIT

FIG. 3

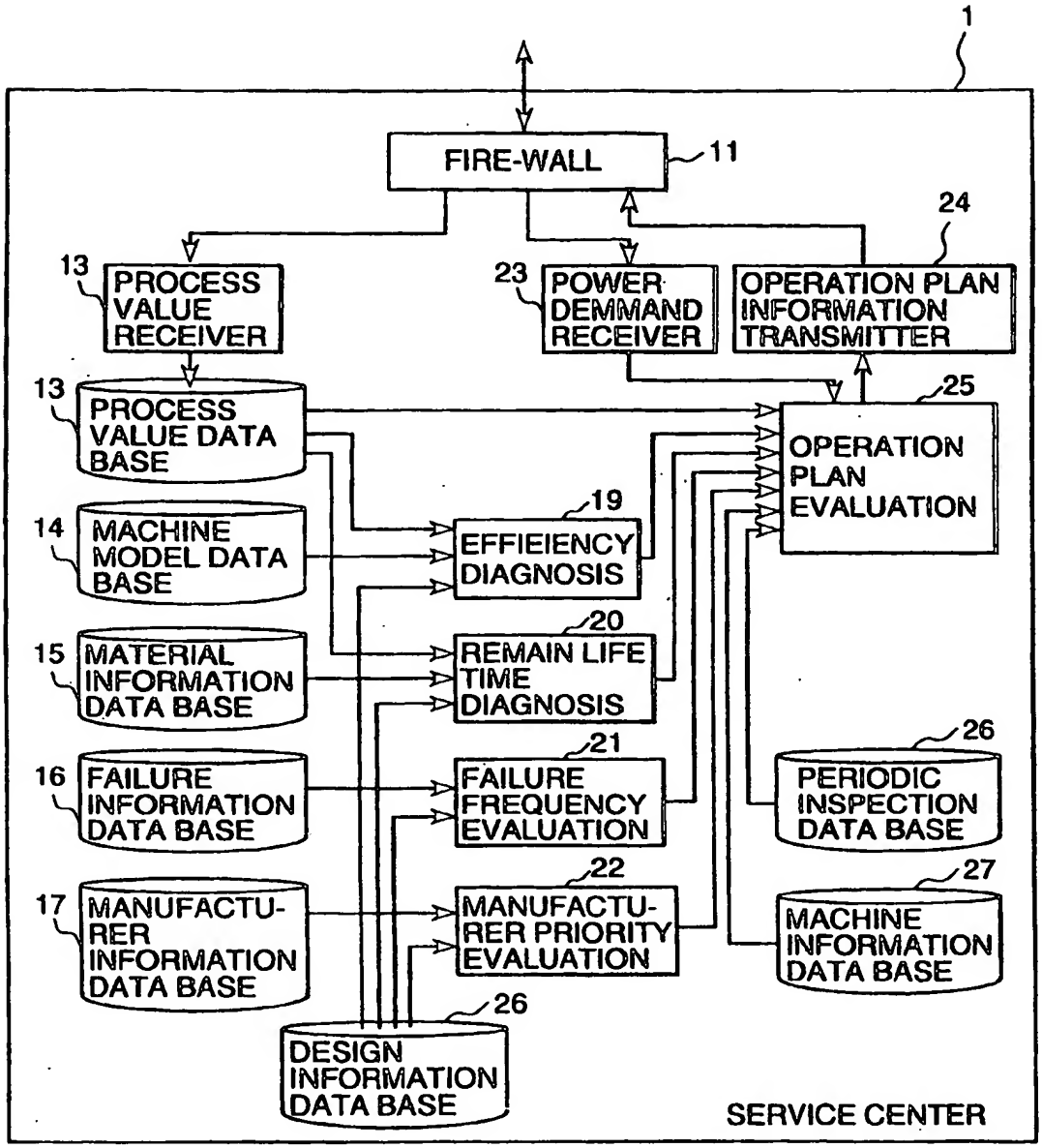

1
FIRE-WALL
11
24
13
PROCESS VALUE RECEIVER
23
POWER DEMMAND RECEIVER
OPERATION PLAN INFORMATION TRANSMITTER
13
PROCESS VALUE DATA BASE
25
OPERATION PLAN EVALUATION
19
14
MACHINE MODEL DATA BASE
EFFIEIENCY DIAGNOSIS
20
15
MATERIAL INFORMATION DATA BASE
REMAIN LIFE TIME DIAGNOSIS
26
21
16
FAILURE INFORMATION DATA BASE
FAILURE FREQUENCY EVALUATION
PERIODIC INSPECTION DATA BASE
22
27
17
MANUFACTU-RER INFORMATION DATA BASE
MANUFACTU-RER PRIORITY EVALUATION
MACHINE INFORMATION DATA BASE
26
DESIGN INFORMATION DATA BASE
SERVICE CENTER

FIG. 4

PROCESS VALUE DATA BASE

POWER PLANT	UNIT	PROCESS No.	PROCESS VALUE			
		TIME	12:00:20	12:00:19	12:00:18	...
POWER PLANT A	UNIT 1	PID001	100.0	99.0	99.5	
		PID002	120.0	119.0	118.0	
		PID003	100.0	100.0	100.0	
		⋮				
	UNIT 2					

FIG. 5

DESIGN INFORMATION DATA BASE

POWER PLANT	UNIT	MACHINE (MANUFATURER/TYPE)	PARTS (MANUFACTURER/TYPE)
POWER PLANT A	UNIT 1	GAS TURBINE(A Co./GT001)	COMBUSTOR(B Co./CB003)
			TURBINE(A Co./TB001)
			COMPRESSOR(A Co./CP001)
		GENERATOR(B Co./GN005)	
			⋮

FIG. 6

PART	MANUFATURER/ TYPE	MACHINE MODEL	INPUT OUTPUT SPECIFICATION
COMPRESSOR	A Co./CP001	MODEL CP001	INPUT:PID010,PID015,・・ OUTPUT:PID030,PID035,・・
	B Co./CP001	MODEL CP003	
	⋮		
TURBINE	A Co./ TB001		

FIG. 7

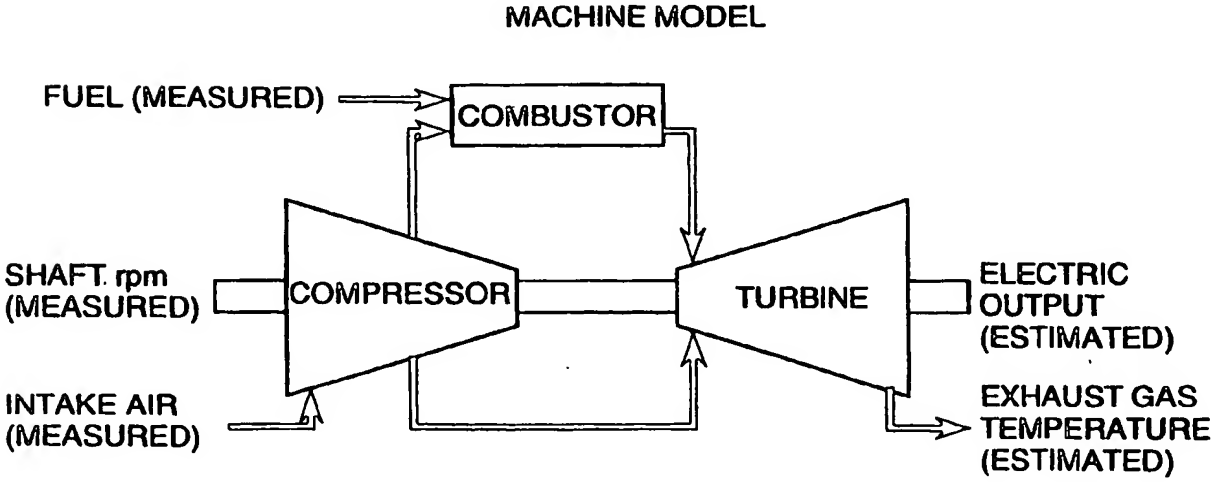


FIG. 8

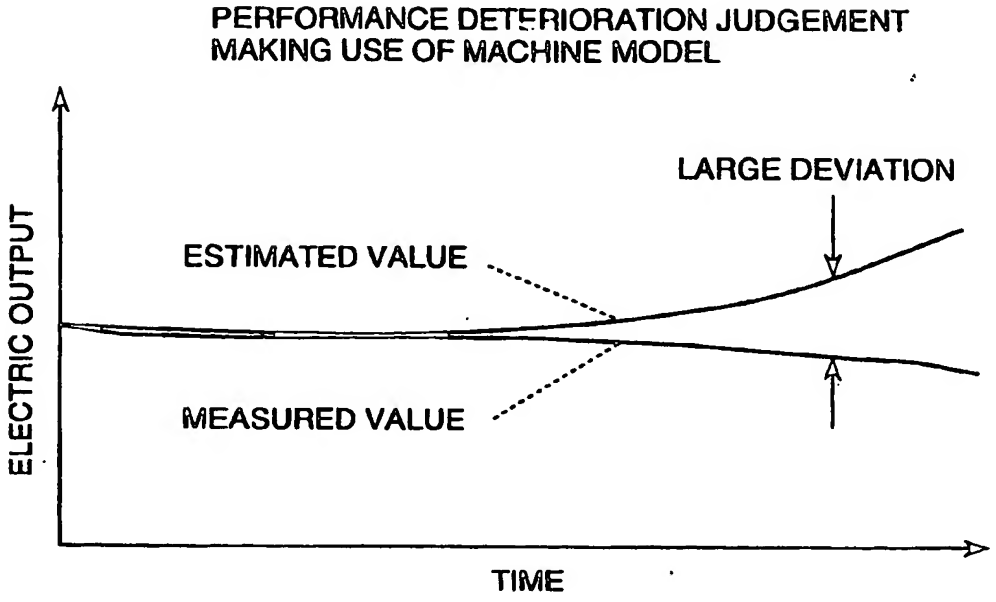

PERFORMANCE DETERIORATION JUDGEMENT MAKING USE OF MACHINE MODEL
LARGE DEVIATION
ESTIMATED VALUE
MEASURED VALUE
ELECTRIC OUTPUT
TIME

FIG. 9

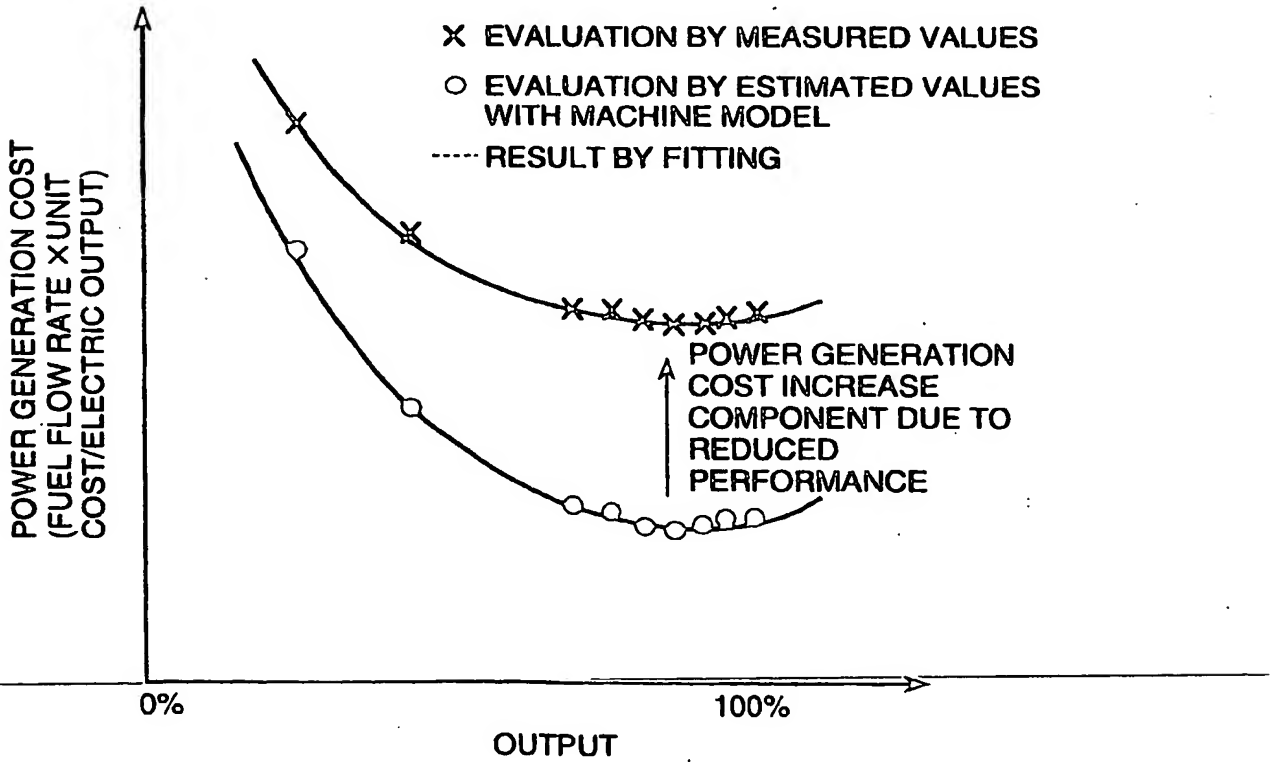

X EVALUATION BY MEASURED VALUES
O EVALUATION BY ESTIMATED VALUES WITH MACHINE MODEL
----- RESULT BY FITTING
POWER GENERATION COST INCREASE COMPONENT DUE TO REDUCED PERFORMANCE
POWER GENERATION COST (FUEL FLOW RATE X UNIT COST/ELECTRIC OUTPUT)
0%
100%
OUTPUT

FIG. 10

PERIODIC INSPECTION INFORMATION DATA BASE

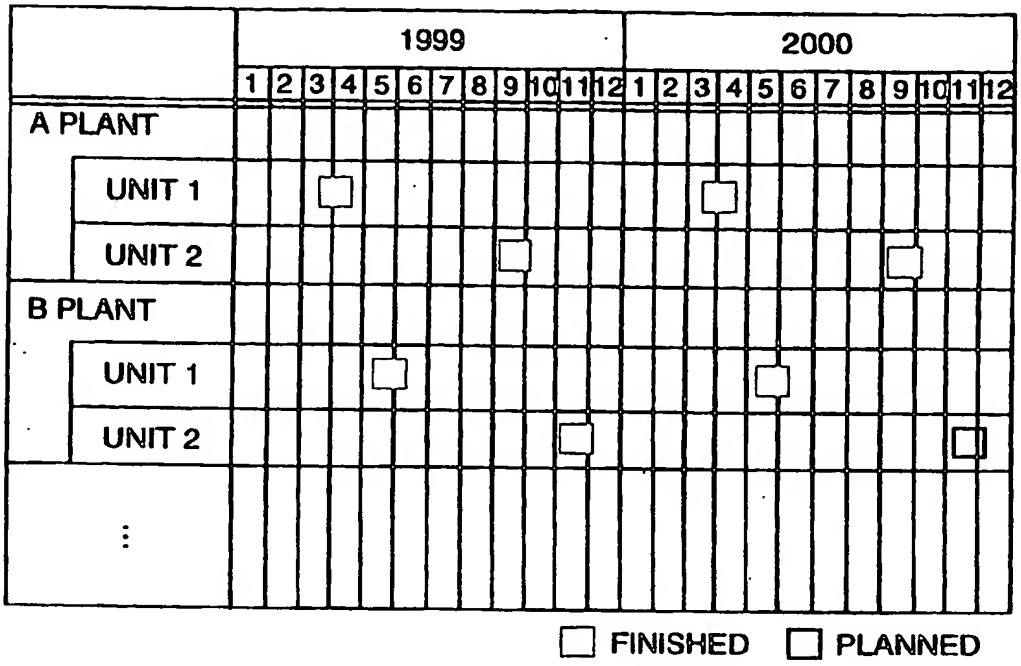
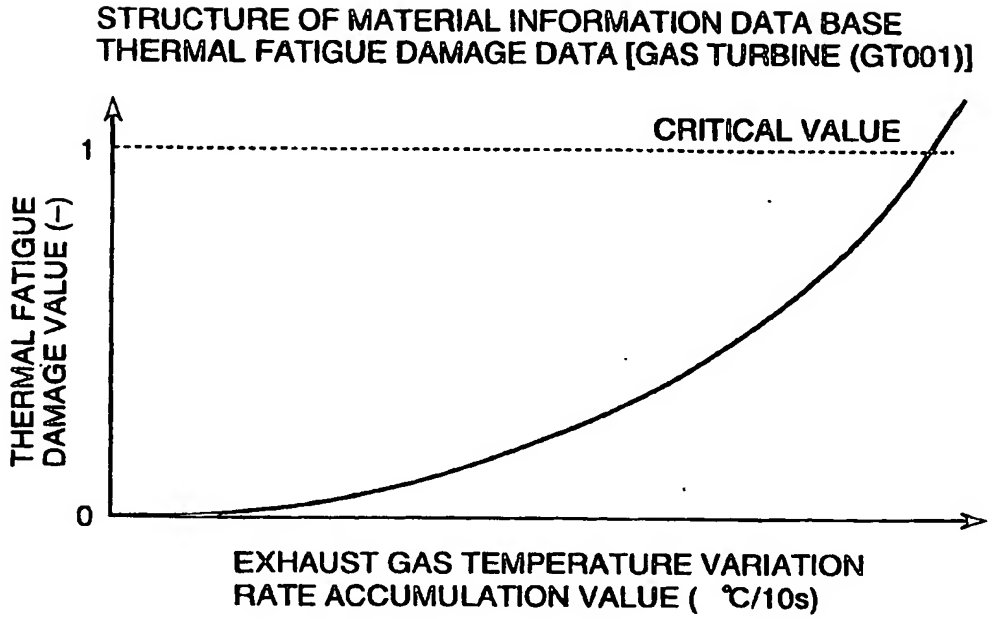


FIG. 11

MACHINE INFORMATION DATA BASE

MACHINE/ PARTS	MANUFACTURER/ TYPE	PURCHASED PRICE	DAYS FOR INSTALLATION
GAS TURBINE	A Co./GT001	20000M	10 DAY
	B Co./GT003	16000M	14 DAY
	C Co./GT001	24000M	8 DAY
	⋮	⋮	⋮
⋮	⋮	⋮	⋮

FIG. 12


STRUCTURE OF MATERIAL INFORMATION DATA BASE
THERMAL FATIGUE DAMAGE DATA [GAS TURBINE (GT001)]
CRITICAL VALUE
1
0
THERMAL FATIGUE DAMAGE VALUE (–)
EXHAUST GAS TEMPERATURE VARIATION RATE ACCUMULATION VALUE (℃/10s)

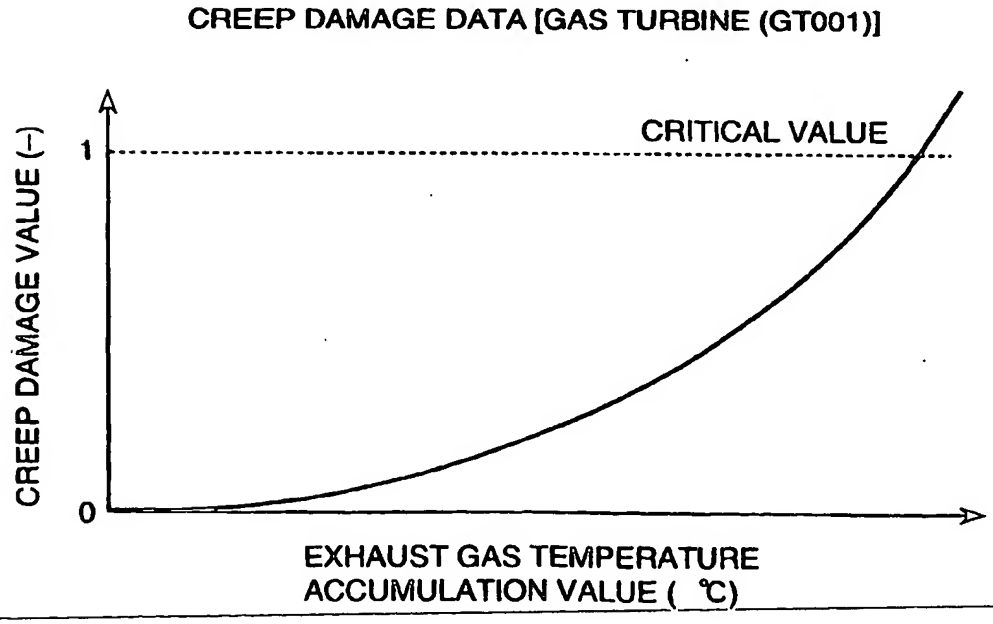

CREEP DAMAGE DATA [GAS TURBINE (GT001)]
CRITICAL VALUE
1
0
CREEP DAMAGE VALUE (–)
EXHAUST GAS TEMPERATURE ACCUMULATION VALUE (℃)

FIG. 13

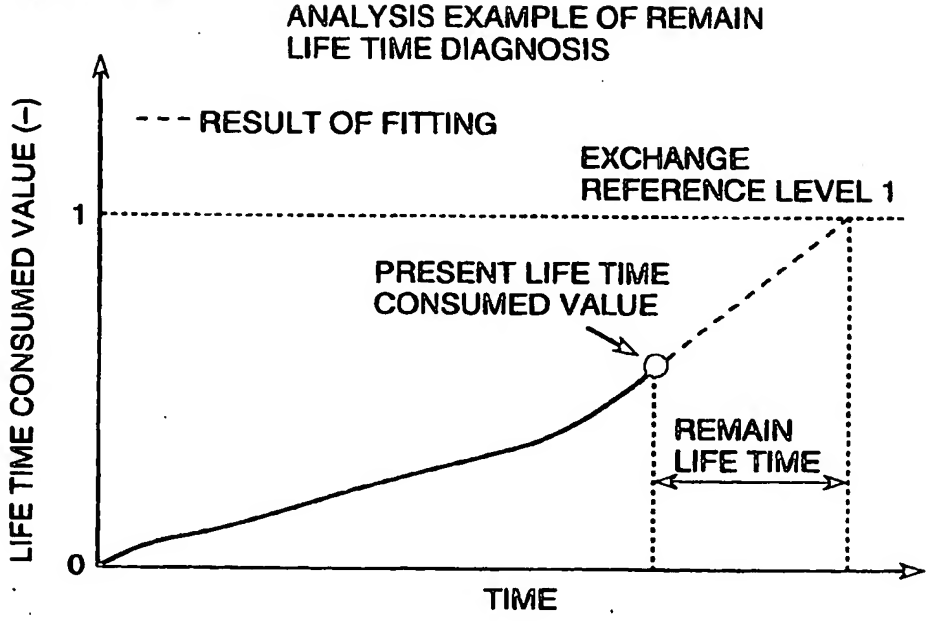


FIG. 15

FAILURE INFORMATION DATA BASE

DATE OF FAILURE OCCURRED	PLANT	UNIT	PARTS (MANUFACTURER/ TYPE)	DATE OF PREVIOUS REPAIR, EXCHANGE	CAUSE OF FAILURE
2000.9.10	PLANT A	UNIT 1	VALVE (A Co./VL0010)	1992.3.20	PACKING DETERIO-RATION
1998.6.5	PLANT B	UNIT 2	PUMP (B Co./PU032)	1990.4.1	COUPLING BREAKAGE
⋮	⋮	⋮	⋮	⋮	⋮

FIG. 16

MANUFACTURER INFORMATION DATA BASE

MANUFACTURER	RELIABILITY	MAINTENANCE CAPACITY
A Co.	A	A
B Co.	A	B
C Co.	B	B
	⋮	⋮

FIG. 14

FLOW OF OPERATION AND MAINTENANCE PLANNING MAKING USE OF REMAIN LIFE TIME DIAGNOSIS RESULT

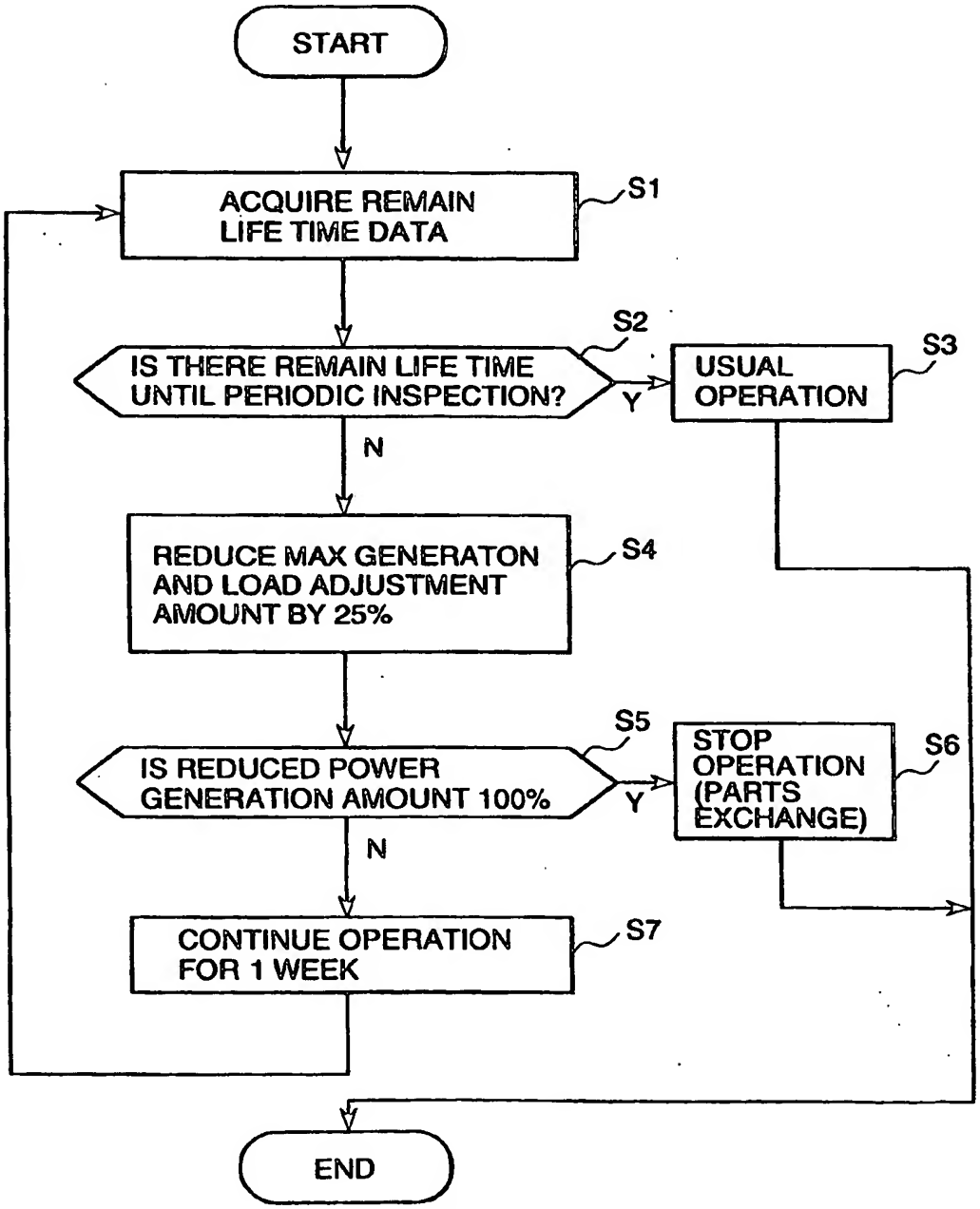


FIG. 17

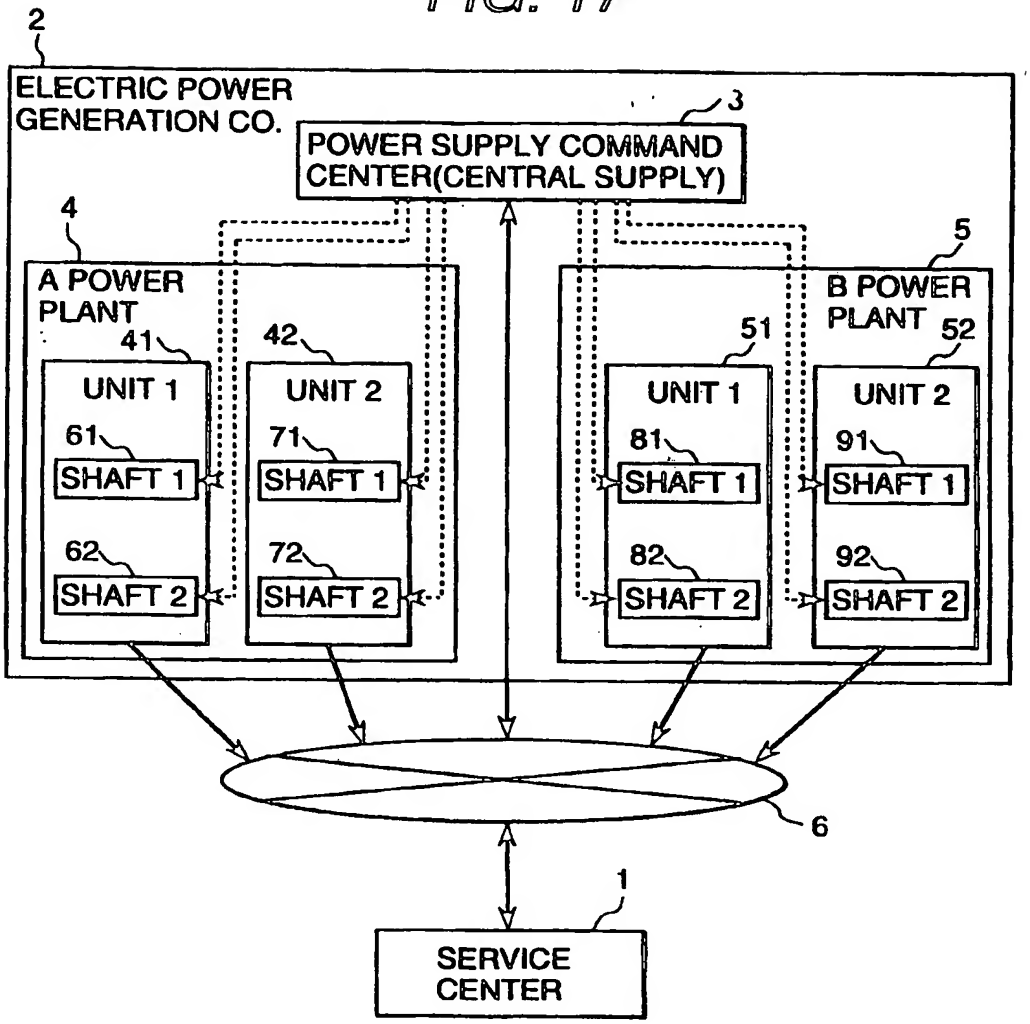

2
ELECTRIC POWER GENERATION CO.
3
POWER SUPPLY COMMAND CENTER(CENTRAL SUPPLY)
4
A POWER PLANT
41
UNIT 1
61
SHAFT 1
62
SHAFT 2
42
UNIT 2
71
SHAFT 1
72
SHAFT 2
5
B POWER PLANT
51
UNIT 1
81
SHAFT 1
82
SHAFT 2
52
UNIT 2
91
SHAFT 1
92
SHAFT 2
6
1
SERVICE CENTER

FIG. 18

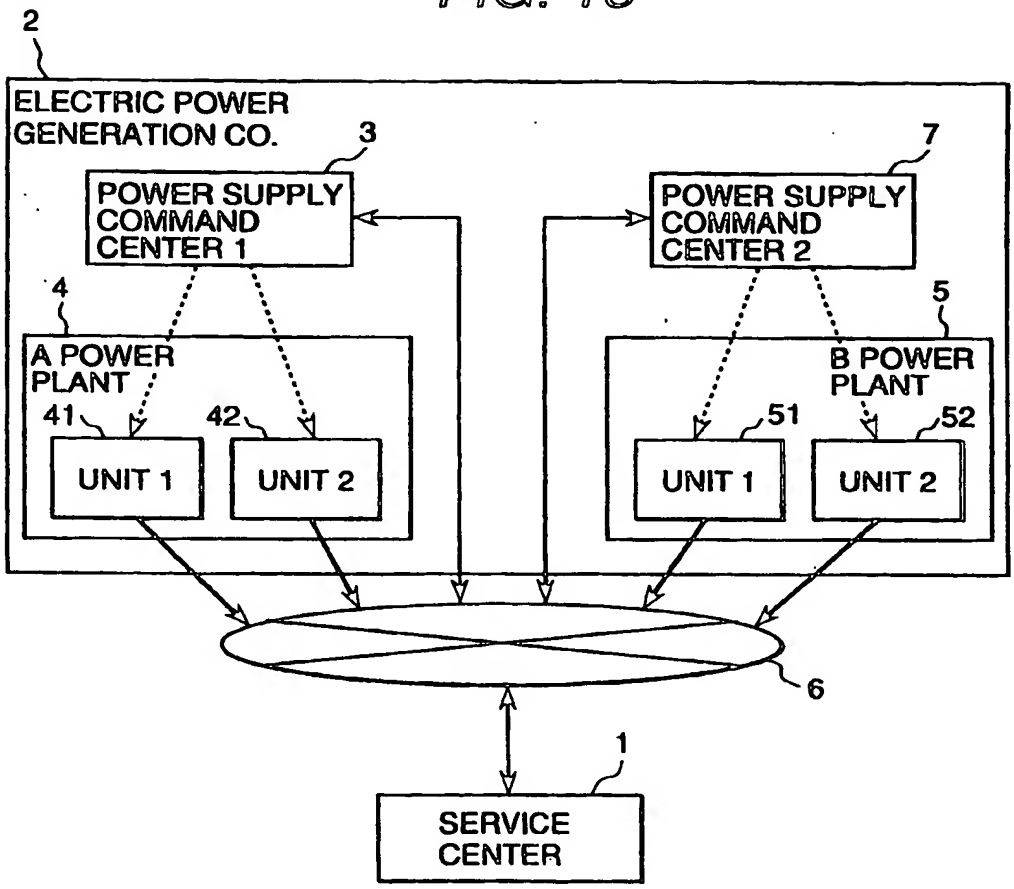

2
ELECTRIC POWER GENERATION CO.
3
POWER SUPPLY COMMAND CENTER 1
7
POWER SUPPLY COMMAND CENTER 2
4
A POWER PLANT
5
B POWER PLANT
41
42
UNIT 1
UNIT 2
51
52
UNIT 1
UNIT 2
6
1
SERVICE CENTER

FIG. 19

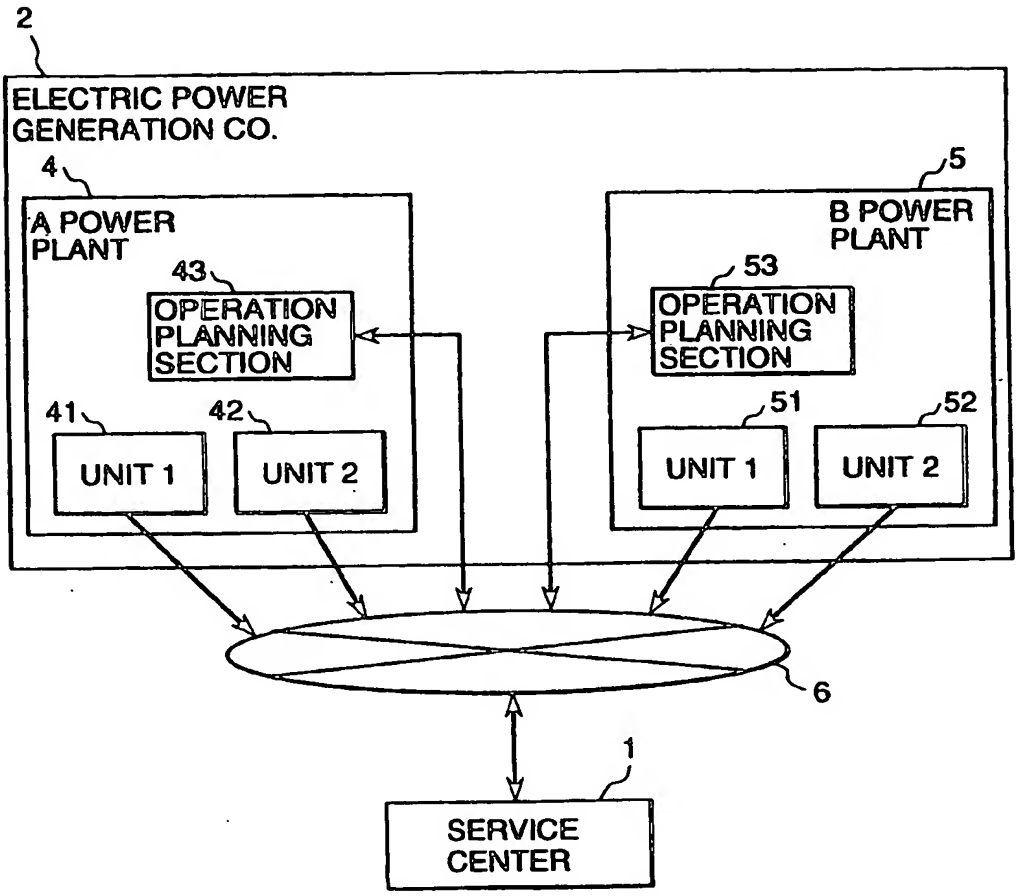

2
ELECTRIC POWER GENERATION CO.
4
A POWER PLANT
43
OPERATION PLANNING SECTION
41
UNIT 1
42
UNIT 2
5
B POWER PLANT
53
OPERATION PLANNING SECTION
51
UNIT 1
52
UNIT 2
6
1
SERVICE CENTER

FIG. 20

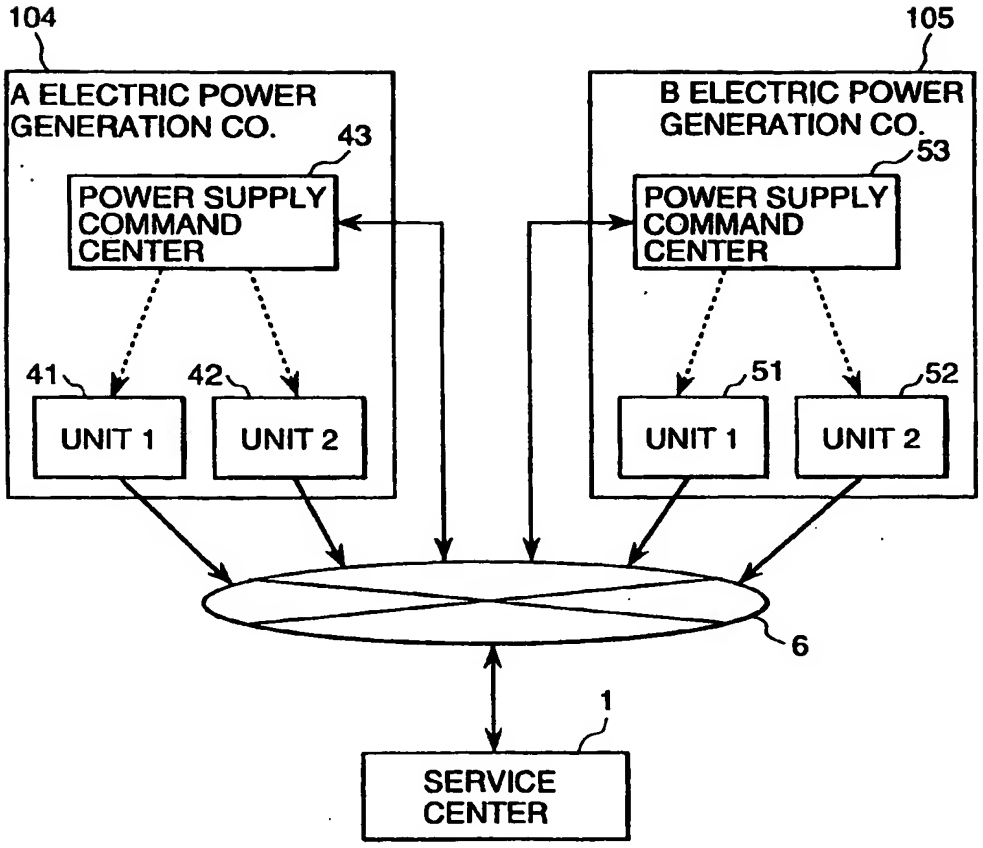

104
105
A ELECTRIC POWER GENERATION CO.
B ELECTRIC POWER GENERATION CO.
43
53
POWER SUPPLY COMMAND CENTER
POWER SUPPLY COMMAND CENTER
41
42
51
52
UNIT 1
UNIT 2
UNIT 1
UNIT 2
6
1
SERVICE CENTER

FIG. 21

PROCESS VALUE DATA BASE

POWER GENERATION Co.	UNIT	PROCESS No.	PROCESS VALUE			
		TIME	12:00:20	12:00:19	12:00:18	···
A POWER GENERATION Co.	UNIT 1	PID001	100.0	99.0	99.5	
		PID002	120.0	119.0	118.0	
		PID003	100.0	100.0	100.0	
		⋮				
	UNIT 2					

FIG. 22

DESIGN INFORMATION DATA BASE

POWER GENERATION Co.	UNIT	MACHINE (MANUFATURER/TYPE)	PARTS (MANUFACTURER/TYPE)
A POWER GENERATION Co.	UNIT 1	GAS TURBINE(A Co./GT001)	COMBUSTOR(B Co./CB003)
			TURBINE(A Co./TB001)
			COMPRESSOR(A Co./CP001)
		GENERATOR(B Co./GN005)	
			⋮

FIG. 23

PERIODIC INSPECTION INFORMATION DATA BASE

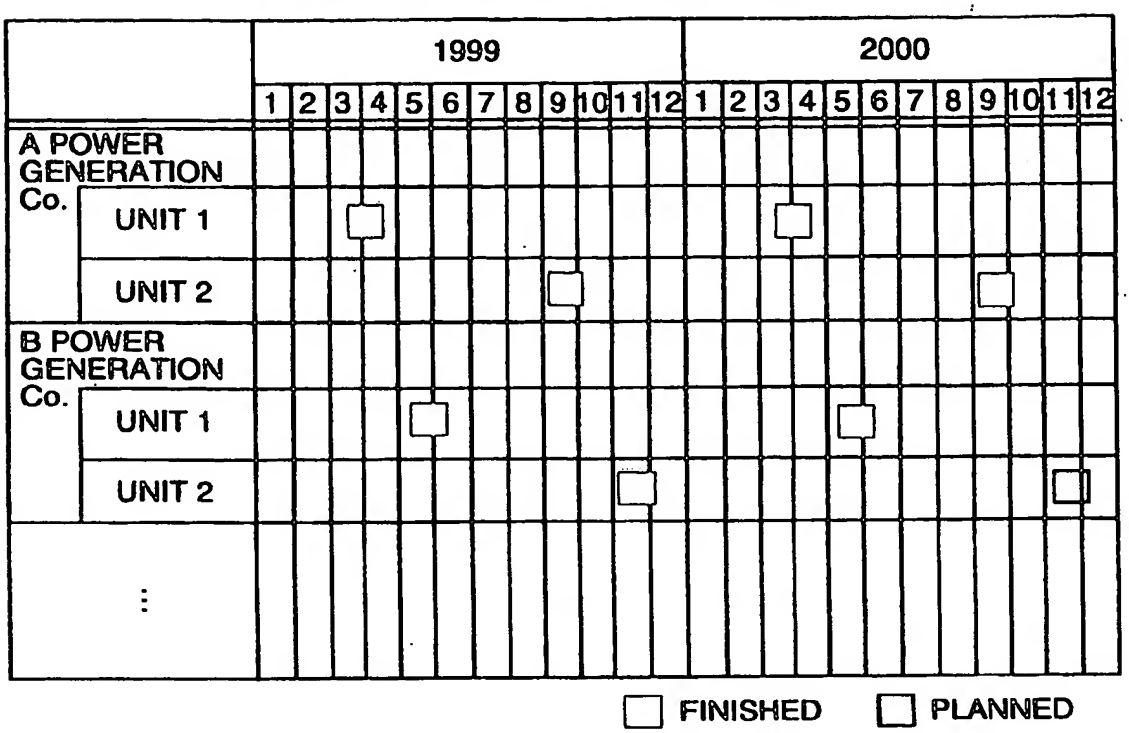


FIG. 24

FAILURE INFORMATION DATA BASE

DATE OF FAILURE OCCURRED	POWER GENERATION Co.	UNIT	PARTS (MANUFACTURER/ TYPE)	DATE OF PREVIOUS REPAIR, EXCHANGE	CAUSE OF FAILURE
2000.9.10	A POWER GENERATION Co.	UNIT 1	VALVE (A Co./VL0010)	1992.3.20	PACKING DATRERIO-RATION
1998.6.5	B POWER GENERATION Co.	UNIT 2	PUMP (B Co./PU032)	1990.4.1	COUPLING BREAKAGE
⋮	⋮	⋮	⋮	⋮	⋮

FIG. 25

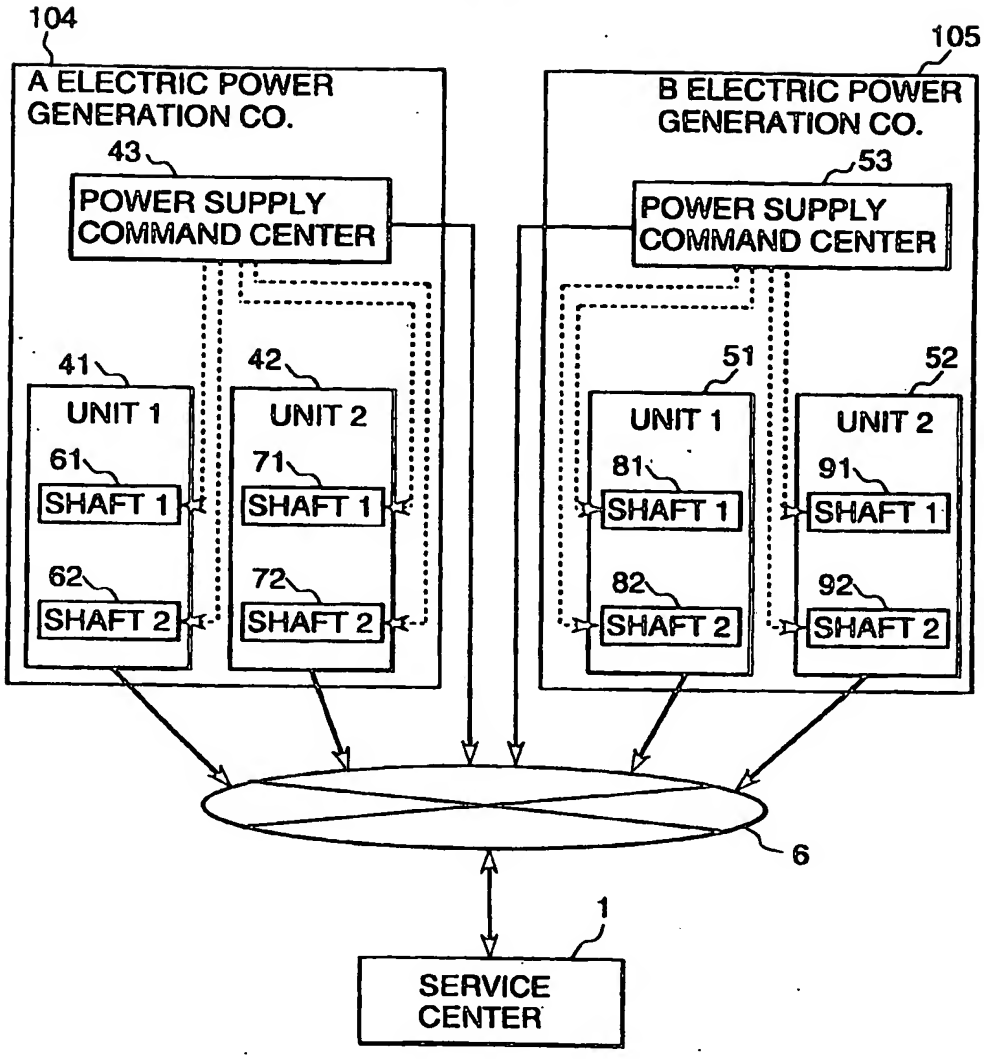

104
A ELECTRIC POWER GENERATION CO.
43
POWER SUPPLY COMMAND CENTER
41
UNIT 1
61
SHAFT 1
62
SHAFT 2
42
UNIT 2
71
SHAFT 1
72
SHAFT 2
105
B ELECTRIC POWER GENERATION CO.
53
POWER SUPPLY COMMAND CENTER
51
UNIT 1
81
SHAFT 1
82
SHAFT 2
52
UNIT 2
91
SHAFT 1
92
SHAFT 2
6
1
SERVICE CENTER

FIG. 26

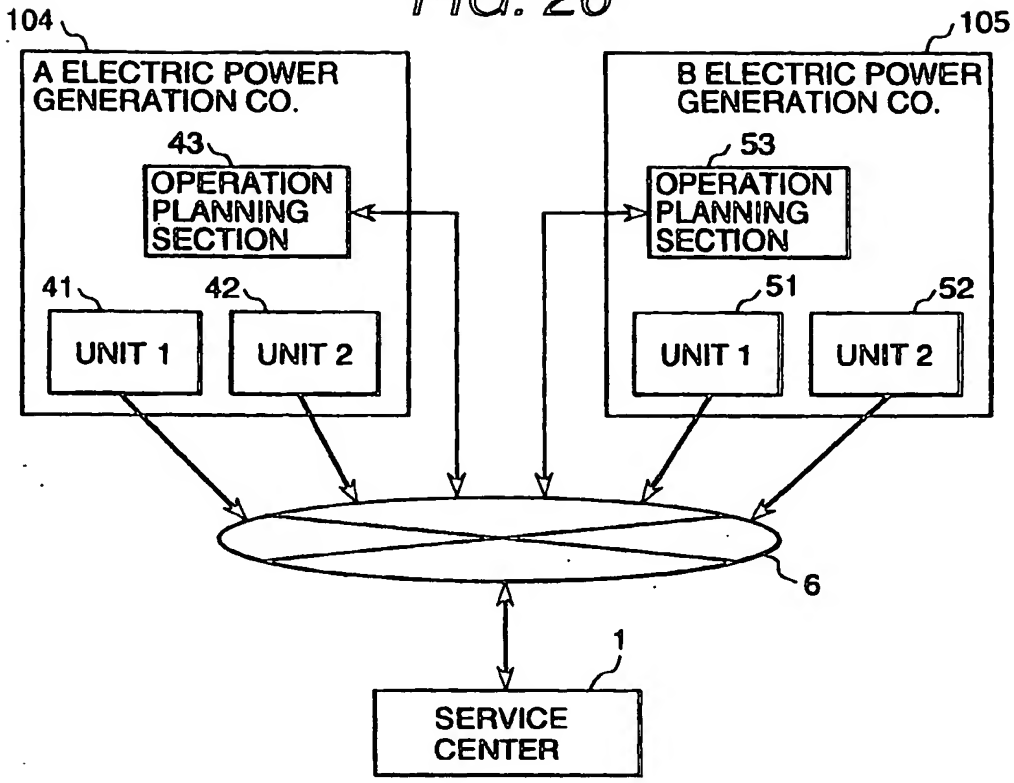


FIG. 27(a)

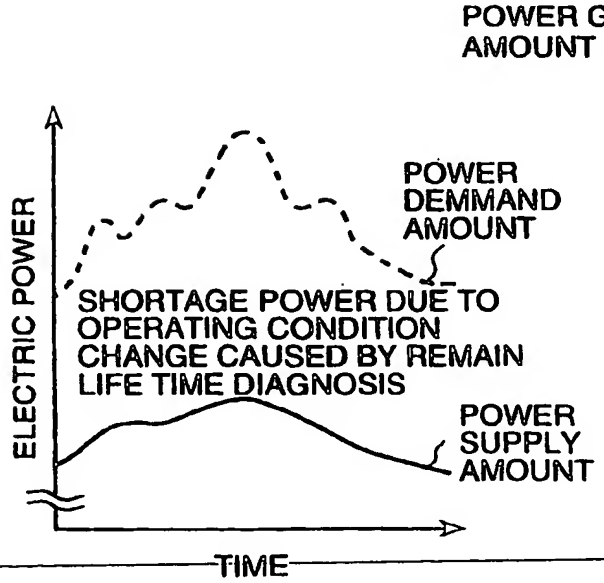


FIG. 27(b)